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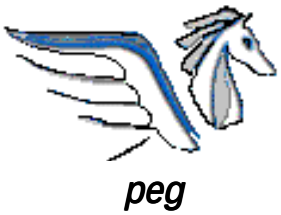
Personal Income Taxation in Indonesia: Revenue Potential and Distribution of the Burden

By Stephen V. Marks



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Personal Income Taxation in Indonesia:
Revenue Potential and Distribution of the Burden

The personal and corporate income tax systems of Indonesia have great potential to provide additional revenue yields in the future, through improved design and administration as well as through growth of the economy. In the year 2002, non-oil-gas income taxes contributed 40.4 percent of total central government tax revenues, and two-thirds of that amount came from personal income taxes. Income taxation is also the single most important progressive component of the national tax system—one that imposes higher average and marginal rates of taxation on higher-income households as opposed to lower-income households. In this respect, income taxation is distinct from most commodity-based taxes applied in Indonesia, such as the value-added tax, excise taxes, and import tariffs.[1]

This study focuses on the revenue potential and allocation of burdens of the personal income tax system in Indonesia. It does so through calculation of the income tax obligations of thousands of households in the 2002 National Socioeconomic Survey (Susenas). The analytical framework developed in this study is a preliminary step toward examination of the revenue impact of improved administration as well as changes in the design of the personal income tax system. For example, one could examine the impact of whether or not it is feasible to tax farm income, or the impact of a change in the structure of exemptions or tax rates. It also provides important insights into how the burden of the income tax is spread over households throughout the income distribution.

Section 1 of this report lays out the basic framework, while Section 2 discusses the various assumptions in detail. Section 3 presents the findings of the analysis, and Section 4 presents an agenda for future research based on this framework. It also discusses some of the additional data that would allow more precise estimates of personal income tax potential.

Attached as an appendix is the source code of the Visual Basic program that was used to handle each household and to estimate its personal income tax obligations. Before this Visual Basic program could be used, the core and module Susenas data had to be rearranged and combined. These manipulations were done with the Stata statistics program. The Visual Basic program put its output for each household into a new data set, and Stata was used to summarize the findings in it. None of the Stata code is included in the appendix. Any of the aspect of the analysis could have been done with a variety of software tools. Use of spreadsheets was not feasible, however, due to the size of the data sets.

1. Framework

This study uses the core individual survey and the income module survey of the 2002 Susenas. The income module covers 64,422 households—a subset of the households included in the core surveys—and that is the sample used in this analysis. In the Susenas data sets, each household is given a weight, intended to indicate the number of similar households

[1] The luxury commodity taxes have certainly been motivated in part by the progressivity objective, but have not all hit higher-income households the hardest. Luxury taxes on bottled soft drinks, some footwear items, and electronics goods like cellular telephones may be regressive on balance, for example.

in Indonesia that this household represents.[2] These weights were used in the summarization of the findings of the analysis, so that these findings have significance at the national level.

The core individual data set contains detailed information on the individual members of the households interviewed in the core Susenas survey. From the standpoint of this income tax analysis, the relevant characteristics of an individual are his or her relationship to the head of the household, marital status, age, and gender. These data on individuals were then combined with data from the income module, which contains wage and salary income for the individual members of the household as well as total household income from farming enterprises, other businesses, interest, pensions, and other kinds of income and expenditure.

Separate calculations were done for income taxes that would be collected (1) under Articles 21 and 25 of the income tax law, which cover labor-income withholding taxes and final calendar-year tax obligations of taxpayers, respectively,[3] and (2) under Article 23, which covers the final withholding of income tax from interest, dividends, royalties, and similar income.[4]

All of the non-labor income for the household is allocated to the head of the household. The head of the household is grouped with his or her spouse or spouses and other dependents as a single taxpaying entity (*wajib pajak*). The labor income is then allocated to the individual members of the household for whom it was reported, including potentially the head of household and his or her spouse.

The allocation of all non-labor income to the head of household could lead to an upward bias in the revenue estimates, to the extent that in reality this income is spread out among separate taxpayers within a given household. In that case, allocation of the income to the head of household would incorrectly concentrate the income and thus tend to push the head of household toward higher marginal income tax rates than might be experienced by the taxpayers within the household if the income were properly allocated.

If other members of the household have labor income or are identified as being the probable recipient of any pension income reported for the household, they are treated as separate taxpaying entities, and may be grouped with a spouse or other dependents based on the individual data of these members of the household. For example, suppose in a particular household that there is a son of the head of the household who is married, a daughter-in-law who is also married, and several grandchildren. It is reasonable to infer that the son and daughter-in-law are married to each other, and that the grandchildren are their children.

2. Assumptions

Given limitations of the data, a number of complicated and ambiguous situations can arise, and it is necessary to discuss in detail the assumptions made to resolve these ambiguities.

[2] Each individual is also given a weight, but these were not used in the calculations.

[3] Also included are final income taxes on honoraria and related income. The Susenas data do not permit these forms of income to be separated from the income covered under Articles 21 and 25.

[4] The income tax law is *Undang-Undang Republik Indonesia Nomor 7 Tahun 1983, Tentang Pajak Penghasilan, Sebagaimana Telah Diubah Terakhir Dengan Undang-Undang Republik Indonesia Nomor 17 Tahun 2000*.

Wage and Pension Income

Wage income reported in the Susenas survey is the net wage income that the individual takes home. To calculate the income tax liability, it is necessary to infer gross wage income. To do this, I assume that the only deduction from wages is withholding tax. Withholding tax in turn is estimated through an iterative procedure, based on the income tax exemptions (PTKP) that have been inferred for the individual, as well as his or her job-related expenses, which are deductible from labor income at a standard rate.[5]

Pension income is treated similarly. I assume that the only deduction from it is withholding tax. This is calculated iteratively, using the fact that pension recipients are allowed to deduct pension-related expenses from their pension income at a standard rate.[6]

Marital Relationships

Marital relationships are important in determining the groupings of individuals as *wajib pajak* within the household, and in determining the level of tax exemptions (PTKP, or *penghasilan tidak kena pajak*) for each *wajib pajak*.[7]

If two members of the household are in appropriate groups in relation to the head of household, are listed as married, and are of opposite gender, then they are assumed to be married to each other. Appropriate groups are shown side-by-side below:

If an individual is in this relation to the head of the household	Then his or her spouse can be in this relation to the head of the household
Head of household	Spouse (by definition)
Child	Son or daughter in law
Parent or parent-in-law	Parent or parent-in-law
Grandchild	Other relative
Other relative	Other relative
Household assistant	Household assistant
Others	Others

If a member of the household is listed as married, but no candidate spouse can be found, I assume that the member of the household is separated financially from the spouse, in terms of their assets and income tax obligations.[8]

There could be ambiguities in identifying marital partners. For example, suppose that in a particular household there are two daughters of the head of the household, both of whom are

[5] These job-related expenses (*biaya jabatan*) are by law set at 5 percent of gross wages, up to a maximum of Rp 1,296,000 per year.
[6] These pension-related expenses (*biaya pensiun*) are by law set at 5 percent of gross pensiun income, up to a maximum of Rp 432,000 per year.
[7] A taxpayer gets a personal PTKP of Rp 2,880,000, and an additional PTKP of Rp 1,440,000 for a spouse and for each of up to three additional dependents. If the spouse works, the couple gets additional PTKP of Rp 2,880,000.
[8] This is in line with the tax law, Article 8, paragraph (2), item a.

listed as married, and only one son-in-law. We can reasonably infer that one of the daughters is married to the son-in-law, while the other is physically separated from her husband. In an effort to resolve ambiguities of this sort, I use the following rules in imputation of marital partners. If possible, the husband is at least as old as the wife.[9] If that rule is satisfied *or* violated by *both* of any potential pairing of marital partners, then the pairing that results in the age of the husband being closest to 3.5 years greater than the age of the wife is chosen.[10]

Other Dependents

Under Indonesian law, a taxpayer can claim up to three additional dependents in the form of children under the age of 18 who have never been married and have no income of their own, or parents or parents-in-law who are fully dependent on the taxpayer.
The approach I use is to look for additional dependents among appropriate groups within the household. In none of these cases do I require that both a taxpayer and his or her spouse be present in the household, as long as the taxpayer who is the probable economic provider for the dependents is listed as married, divorced, or widowed.

- For the head of household, children and parents or parents-in-law can be dependents, if they meet the legal tests already mentioned. For a parent or parent-in-law to be treated as fully dependent, I require that neither the person nor his or her probable spouse, if any, have any labor income or probable pension income.[11]

- For a child, son-in-law, or daughter-in-law, grandchildren of the head of household can be dependents, if they meet the legal tests.

- For grandchildren or other relatives, I assume that those in the other relatives category who meet the three tests above, and who in addition are at least 12 years younger than the older of the two probable parents, can be their dependents. Similar tests are applied to probable parents among other relatives, household assistants, and others.

The income tax law allows a maximum of three dependents for each taxpayer, in addition to a spouse if any. For any of the searches for dependents above (except for dependents of the head of the household), if more than three probable dependents are available, I assume that they are allocated among taxpayers in such a way as to minimize the household tax liability (only three are used by a given taxpaying entity).

[9] Based on the Susenas income module sample, the husband was at least as old as the wife in more than 95 percent of the marriages of heads of households. There was a husband who was 67 years older than his wife, and a wife who was 62 years older than her husband. *Awet muda!*
[10] The mean difference between the ages of husbands and wives in the sample is slightly more than five years, but the modal difference is about 3.5 years. More than 40 percent of the marriages involve the husband being two, three, four, or five years older than the wife.
[11] This is a weaker test than under Indonesian law, which requires that the economic provider be the sole source of support for the dependent. Under the law, then, the dependent could not have interest income, for example, but the Susenas data do not allow us to identify the individual recipients of non-labor income earned in a household.

Pension Income

There is great uncertainty over the identity of the pension recipient or recipients in the household, since a single pension income number is given for the entire household. If there is pension income, it will be assumed that the head of the household is the recipient of that income if that person is 55 years of age or older, or if that person is a widow or widower. Otherwise, the recipient of the pension income is assumed to be the oldest person in the household, except that it is not allowed to be a household assistant.

Asset Income

For purposes of calculating income taxes under Article 23, the tax rate of 15 percent is applied to dividends and royalties, and 20 percent for interest income.[12]

Business Income

It is assumed that all farming and other business income reported by the household is subject to personal income taxes rather than corporate income taxes. In practice, many small businesses are incorporated. Individuals and corporations are subject to some different income tax rules. For example, corporations do not have personal or familial exemptions like individuals. Their income tax rate structures are different as well, as shown below:

Personal Income Tax Rate Structure	
Income (Y) Range (Rp millions)	**Marginal Tax Rate (percent)**
$0 < Y \leq 25$	5
$25 < Y \leq 50$	10
$50 < Y \leq 100$	15
$100 < Y \leq 200$	25
$200 < Y$	35

Corporate Income Tax Rate Structure	
Income (Y) Range (Rp millions)	**Marginal Tax Rate (percent)**
$0 < Y \leq 50$	10
$50 < Y \leq 100$	15
$100 < Y$	30

The top rates are different—35 percent for personal and 30 percent for corporate income taxes—but not too far different. Some tax experts have recommended that the top corporate

[12] The 20 percent rate is specified in *Peraturan Pemerintah Nomor 131 Tahun 2000, Tentang Pajak Penghasilan atas Bunga Deposito dan Tabungan serta Diskonto Sertifikat Bank Indonesia,* 15 Desember 2000. The regulation also stipulates that only income from holdings in excess of Rp 7,500,000 is taxable, but I ignore this provision.

and personal income tax rates be fully unified, to avoid incentives for changes in business organization intended to avoid taxes.

Depreciation of Capital Goods

All household purchases of capital goods are assumed to be business-related investments, but only if the household reported farming or other business income.[13] I assume that tools and equipment are four-year assets and buildings are 20-year assets, and apply the straight-line method.[14]

One problem is that the Susenas data include expenditures on land and residential structures along with those for other buildings. Under the tax law, land purchases can be depreciated only if the earth itself is used as an input into production, such as for the production of ceramics or bricks,[15] and residential structures can be depreciated only if they are used to earn income. Other tools or equipment purchased by the household could also be for consumption rather than business purposes. Thus, if we suppose that the asset lives are correct, this approach would overestimate the amount of depreciation that could be claimed for capital investments in a given year.

On the other hand, in practice there would have been investments from previous years that could have been depreciated in tax year 2002 that are not accounted for. Thus, the biases in calculation of tax revenues should tend to partly offset each other, though it is unknowable whether the bias is positive or negative on net.

Finally, under Indonesian income tax law, net business income is not allowed to be negative. If a company incurs a loss, it is allowed to carry over that loss through the next five years to offset positive business income. My calculations follow that approach, and simply list the loss carryover for any households in which a business loss evidently occurred.[16]

3. Findings

Table 1 shows some general characteristic of the population of Indonesian taxpayers, based on the analysis of the Susenas sample. Of the 52.6 million households inferred from the sample, I estimate that there would be 63.1 million separate taxpayers. It should be mentioned that this analysis will tend to underestimate the total number of taxpayers in these household, since for non-labor income the Susenas reports only a single figure for the entire household. It could be that several individual members of the household have separate non-labor income that would make them separate taxpayers under Indonesian law.

In addition, 69.0 percent of the households have farm or non-farm business income, and 36.4 percent have a non-farm business. I estimate that 33.7 percent of the households would pay zero income taxes.

[13] Farming is defined broadly and includes fisheries, forestry, fisheries, and livestock activities.
[14] The straight-line method is required by the law for buildings. See Article 11, clause (6), for details.
[15] The clarification of Article 11 of the law, clauses (1) and (2), provides details.
[16] It turns out that the Susenas sample implies 1.1 percent of the households would have been subject to the loss carryover provisions, under the assumptions made in this analysis.

Aggregate Revenue Potential

Table 2 shows some important aggregate estimates yielded by the analysis.[17] Total household income is estimated to be Rp 878.7 trillion.[18] This figure should be compared with the preliminary official estimates of gross domestic product, national income, and household consumption for 2002 also shown in the table. The Susenas sample clearly under-reports household income, though it is unclear by how much.[19] Probably the principal reason is that households under-report their income to the officials who conduct the survey. Given that households would tend to under-report their income to tax collectors as well, the downward bias may actually provide a more accurate measure of legitimate tax potential.

Of the Rp 878.7 trillion in estimated income, Rp 876.6 trillion would have been covered under Articles 21 and 25, while only Rp 2.1 trillion would have been covered under Article 23 (primarily interest, dividends, and royalties).

Personal income tax payments of Rp 114.3 trillion are estimated based on this sample, under the assumptions described in the previous section. Of that amount, Rp 113.9 trillion would have come from Articles 21 and 25, while only Rp 0.4 trillion would have come from Article 23.

These revenue estimates can be compared with the actual non-oil-gas tax revenue data shown in Table 2. Included among the official data are payroll taxes withheld under Article 21, both personal and corporate payments under Article 25, personal income taxes of a final nature, and asset income taxes withheld under Article 23.

- The total of all personal income taxes is Rp 49.1 trillion, only 43 percent of the potential revenue estimated from the survey data.

- If non-oil-gas corporate income taxes are added in, the total becomes Rp 78.7 trillion, or 69 percent of the potential revenue estimated from the survey data.

Some portion of the household business incomes reported in the Susenas no doubt comes from incorporated household businesses. However, of the corporate income tax payments overall, almost certainly the vast majority is from medium and large corporations, and only a small fraction from household businesses. This point deserves further investigation, but if correct it implies that the actual tax yield from households is closer to the official personal income tax figure without corporate income tax revenues added in. Given that the income data in the Susenas appear to be heavily under-reported, this is a serious cause for concern.

On the other hand, a variety of the kinds of income reported in the Susenas are in reality very difficult to tax, given the informal basis for a substantial portion of the transactions in the

[17] The source for the preliminary official estimates of gross domestic product and related figures is from Bank Indonesia, *Statistik Ekonomi Keuangan Indonesia*, Jakarta, Maret 2003, Tabel IX.3. The official tax revenue figures are from Departemen Keuangan, *Nota Keuangan dan Rancangan Anggaran Pendapatan dan Belanja Negara Tahun Anggaran 2003*, Jakarta, Lampiran 1.

[18] This figure is taxable income. Some households with losses in household businesses actually had negative net income for the year. However, the tax law requires these households to carry over their business losses to offset future business profits over the next five years. If these losses are added to household income, then the aggregate figure drops to Rp 862.7 trillion.

[19] National income differs from household income principally because portions of national income do not flow to households—notably retained earnings and profits tax payments of corporations.

Indonesian economy. This report addresses this issue later, as it is an important topic for future analysis with survey data.

Finally, note that there is one area in which the reality clearly outperforms the revenue potential estimated on the basis of the survey data, and that is taxation of asset income under Article 23. The amount of payments inferred from the survey data is only Rp 0.4 trillion, while the actual amount of revenues in 2002 was Rp 15.0. This suggests that asset income may be especially under-reported in the survey data.

Allocation of the Tax Burden

Figure 1 shows the frequency distribution of taxable income per household. (The pictured distribution is truncated on the right side: the maximum household income in the sample was Rp 184.6 billion.[20]) Figure 2 shows the frequency distribution of income tax payments per household. (This pictured distribution is also truncated on the right side: the maximum household income tax payment would have been Rp 64.6 billion.) Under the current personal income tax system, 43.5 percent of households should pay no more than Rp 40,000 annually, as shown in Figure 2, and 33.7 percent of the households should pay no taxes at all, as noted earlier.

Table 3 shows further details of the distribution of household taxable income. The data are presented by percentiles of the distribution of household income. The first ten rows of data show all the deciles of the income distribution, the next ten show all the percentiles of the top ten percent, and the last ten show the top one percent in increments of one-tenth of a percent. The table shows the mean, minimum, and maximum household income in rupiah for each percentile range.

Table 4 provides further perspectives on the distribution of income and taxes across households. The rows show the same percentiles of the household income distribution as in Table 3. The first column of data shows the share of taxpayers (*wajib pajak*) in each group. Note that, on average, higher-income households tend to have greater shares of the total taxpayers in society. (Multiply the figures in the second set of ten rows by 10, and those in the third set by 100, to compare these figures with those in the first ten rows.) It makes sense that households with more income sources will tend to have higher incomes on average.

The second column shows how skewed the distribution of household income is in Indonesia. The top ten percent of the population has 54.77 percent of the income, the top one percent has 37.30 percent, and even the top one-tenth of one percent has 32.49 percent. The third column shows that application of Indonesia's tax law to this distribution of income implies a highly progressive tax income system, at least on paper. I estimate that the top ten percent of the households should pay 94.35 percent of the personal income taxes, the top one percent should pay 89.02 percent, and just the top one-tenth of one percent should pay 85.64 percent.

The bottom row of Table 4 shows the absolute numerical amounts on which the percentages shares in each column are based. Thus, multiplying any of the numbers in the three columns of data by the relevant total at the bottom, and then dividing by 100, would give the absolute amount corresponding to the percentage share.

[20] It is also censored on the left side (negative values are shown as zero), due to the loss carryover provision.

Table 5 provides an alternative perspective on the personal income tax burden by income bracket. For each percentile, we see the mean, minimum, and maximum of the ratio of household income tax payments to taxable income. In general, this ratio is higher for higher-income households. Indeed, on average households up to the 50th percentile should pay less than 1 percent of their income in personal income taxes, based on the estimates from this sample.

However, there are households up to the 90th percentile of the income distribution that evidently should pay no income taxes, given the design of the personal income tax system. Moreover, although the top marginal tax rate is 35 percent, there are households in the top one-tenth of one percent of the income distribution that should pay only 7.4 percent of their income in taxes. The explanation rests mainly on the number of taxpayers in the household. Each taxpayer and associated spouse and dependents will receive income tax exemptions (PTKP) that shelter part of their income, and moreover these taxpayers will divide up the total household income amongst themselves in a way that tends to put them individually in less than the maximum income tax bracket. Since higher-income households tend to have more taxpayers on average, it is reasonable that some of these households will find much less of their income taxed away.

On the other hand, notice as well that there are households in the top one-tenth of one percent of the income distribution whose tax payments relative to income round up to 35 percent, the highest marginal tax rate, which the ratio of taxes to income should approach asymptotically as household income increases without limit. These households tend to have the highest income and relatively few taxpayers to spread it across.

Alternative Scenarios

Finally, as a simple form of sensitivity analysis, Table 6 compares two alternative scenarios with the benchmark estimates reported to this point:

- In the first, farm business income is excluded from household income, on the grounds that it may be especially difficult to collect taxes on this income.

- In the second, only labor income (wages and pensions) are included in household income, on the grounds that these types of incomes are the easiest to collect.

Exclusion of farm income lowers the aggregate income estimate by only 10.7 percent, to Rp 785.2 trillion. This seems low, given that agriculture, forestry, fisheries and livestock activities accounted for 17.5 percent of GDP in 2002. Two explanations come to mind. One is that these kinds of income could be relatively under-reported in the Susenas sample, consistent with the view that farm income is difficult to tax. The other is that production in these sectors could involve considerable numbers of firms greater than household-sized.

In any case, the exclusion of farm income lowers income tax payments negligibly, by only 1.7 percent, to Rp 112.3 trillion. The simple explanation, consistent with casual empiricism, is that households involved in farming are typically low-income. Much of their income thus tends to be sheltered by their exemptions, and they tend to be subject to low marginal tax rates.

Inclusion only of labor income lowers income by 35.4 percent relative to the benchmark, to Rp 568.1 trillion. However, potential tax revenues fall only by 11.4 percent, to Rp 101.3 trillion.

4. Agenda for the Future

This study is only a very preliminary step toward more sophisticated and realistic modeling of the income tax system in Indonesia. Limitations of the Susenas household and individual data make it difficult to estimate tax obligations with any exactitude. Among these limitations are the following:

- Pension income and all forms of non-labor income are identified only with the household and not with the individual recipients of that income. The recipient of pension income can only be guessed, and all non-labor income must be attributed to the head of the household. Groupings of husbands, wives, and their children or other dependents can only be guessed within many households in which there are multiple married adults.

- Because labor income and pensions are reported as net amounts, the gross amounts can only be guessed, based on the best information available for the household. In addition, there is no way to separate wage income, which is subject to the marginal tax rate for the taxpayer, from honoraria and related kinds of income, which are subject to final withholding at pre-specified tax rates. The questionnaire used for the Susenas survey separates these data, but the amounts are combined in the survey data that are reported to the public.

- It is not clear whether business income is from the modern sector or the informal sector, the important distinction in this case being the accounting standards that are applied. In addition, it cannot be determined whether household business income is for an incorporated household business or is treatable as personal income for tax purposes.

- Household purchases of capital goods include both land and residential structures, which in most cases cannot be depreciated by taxpayers. In addition, it is not knowable whether household purchases of capital goods are for consumption or business purposes. Only in the latter case would depreciation be allowed on these goods. Also, the asset lives of capital goods purchased by the household are not knowable from this data set.

There are also some inherent limitations in this study because it uses a single year of data:

- There is no satisfactory way to handle the depreciation of capital goods purchased in previous years, for which there are no data.

- There is no satisfactory way to handle household business losses, which result in loss carryovers.

Some of these limitations point to ways in which the applicability of the Susenas data for income tax evaluations could be improved, if changes are made in the data gathered and reported in the survey. Such improvements in the data would come at a cost, however, as additional information would be required. Households might resist further prying into their

financial affairs, particularly if they believed that the information could be used by tax authorities.

On the other hand, it could be argued that highly detailed income data could be more directly useful for the government of Indonesia than are the detailed data on household consumption of myriad commodities and services, which are also collected regularly in the survey.

Despite all the limitations mentioned, this analysis yielded some important insights:

- There is evidently considerable room for improvement in personal income tax administration, in that actual personal income tax collections in 2002 were only 56 percent of the potential personal income taxes estimated from the survey data, even though the total household income implied by the survey data is well below the actual aggregate amount.

- The current structure of the personal income tax system is highly progressive. For example, 33.7 percent of households should be paying no income taxes at all, but the top one-tenth of one percent of the households, which earn 32.5 percent of the income, should be paying 85.6 percent of all personal income taxes, based on reported income.

The certainty that income is under-reported both in the Susenas survey and to tax authorities complicates the picture considerably. It would be useful to see if the Large Taxpayer Office of the Ministry of Finance can provide data that would enable comparison of potential and actual revenues among the highest-income households.

This study performed some very preliminary sensitivity analysis—by excluding farm business income, for example—to determine the impact on measured income and personal income tax payments. More can be done along these lines.

- For example, one could look at the detailed data on occupations that are reported along with the labor income for individual household members, in an effort to exclude those forms of labor income that are probably from the informal sector, and thus are very difficult to tax. As an indicator of the magnitude of the problem, the 2002 Susenas sample implies that there are 39.58 million employed persons in Indonesia, but the aggregate number of regular wage workers reported in Indonesia for 2002 was 25.05 million.[21] On this basis, one could infer that more than 36 percent of the employed persons identified by the Susenas survey are in the informal sector.

- An alternative investigation could make the assumption that household businesses with incomes over some threshold are operated as corporations, and then recalculate the effect on tax revenues if these businesses were taxed subject to corporate rather than personal income tax rules and rates. A variation on this theme would be to endogenize the decision to incorporate: it could be posited that households would incorporate their businesses only if it paid to do so in terms of reducing their tax obligations by some threshold amount.

[21] Based on data from Badan Pusat Statistik, *Keadaan Pekerja/Buruh/Karyawan di Indonesia*, Jakarta, Augustus 2002.

Analysis along these lines could aid efforts by the government to develop priorities for improvements in tax administration:

- For example, because exclusion of farm business income results in a decrease in total income of only 10.7 percent, and results in a decrease in total potential tax payments of only 1.7 percent, it could be decided that it does not make sense to devote significant additional resources to tax collection from farm businesses, particularly given the large number of households involved: the Susenas data imply that 24.10 million households, or 45.9 percent of all households, have farm businesses.

- This data set could also be used to provide provincial or even finer breakdowns of income tax potential, which could be used to provide targets for regional income tax yields.

Perhaps the most useful application of an analytical framework like this one is to experiment with changes in the structure of the personal income tax system, in order to determine the impact on revenues and the allocation of the burden.

There are different views on how the personal income tax system might be improved. For example, consider the inference from this analysis that the top one-tenth of one percent of households should be paying 85.6 percent of personal income taxes under the current system.

- Some would view this as a sign that the personal income tax base should be broadened, through reduction of personal tax exemptions, and that the rate structure should be flattened. This perspective emphasizes the problems for economic incentives and taxpayer compliance caused by top marginal tax rates that are too high. Based on this perspective, one might examine alternative tax-rate structures that are revenue neutral on paper and probably revenue gainers in practice due to improved compliance.

- Others would view this as a sign that the personal income tax system should be simplified, so that even greater numbers of taxpayers pay no taxes at all, and that greater administrative efforts should be dedicated to taxpayer compliance among the highest-income taxpayers. This perspective emphasizes the administrative costs of enforcement of the income tax law among vast numbers of low- or moderate-income taxpayers, and the prospects for higher yields among the highest-income taxpayers.

In reality, both of these perspectives contain important insights. The point is that the analytical framework laid out in this report provides a useful albeit imperfect tool for examination of a number of such alternatives.

Table 1. Characteristics of Indonesian Households Implied by the 2002 Susenas

Total Number of Households (millions)	52.6
Total Number of Taxpayers (millions)	63.1
Percentage of Households with Farm or Business Income	69.0
Percentage of Households with a Non-Farm Business	36.4
Percentage of Households that Could Claim Depreciation	6.3
Percentage of Households Paying Zero Income Taxes	33.7

Table 2. Aggregate Totals Estimated from the 2002 Susenas Compared to Official Data for 2002 (Rp trillion)

Total Household Income	878.7
Household Income Covered under Articles 21 and 25	876.6
Household Income Covered under Article 23	2.1
Compared to Reality	
Gross Domestic Product	1,610.0
National Income	1,380.5
Household Consumption	1,270.0
Total Personal Income Tax Payments	114.3
Personal Income Tax Payments under Articles 21 and 25	113.9
Personal Income Tax Payments under Article 23	0.4
Compared to Reality	
Personal Income Taxes Withheld under Article 21	19.5
Income Taxes Paid at End of Year under Article 25	
Personal	0.9
Corporate	29.7
Personal Income Taxes of a Final Nature[1]	13.7
Personal Income Taxes Withheld under Article 23	15.0
Total of all Personal Income Tax Payments Above	49.1
Total of All of the Above Income Tax Payments	78.7

[1] Also includes creditable fiscal payments made by Indonesian citizens departing from the country. In the estimates from the Susenas sample, the final personal income tax payments (on honoraria and related income) are subsumed in the estimates of personal income taxes under Articles 21 and 25.

Figure 1. Frequency Distribution of Taxable Income Per Household

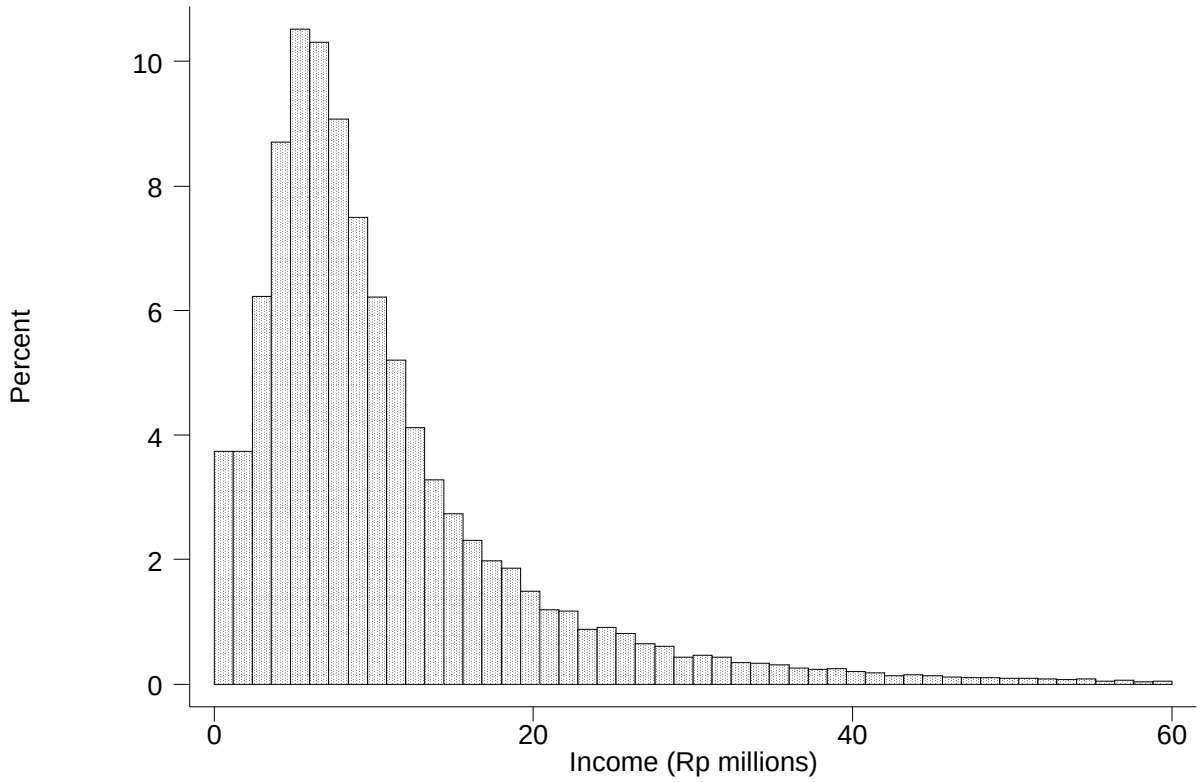

Figure 2. Frequency Distribution of Personal Income Tax Payments Per Household

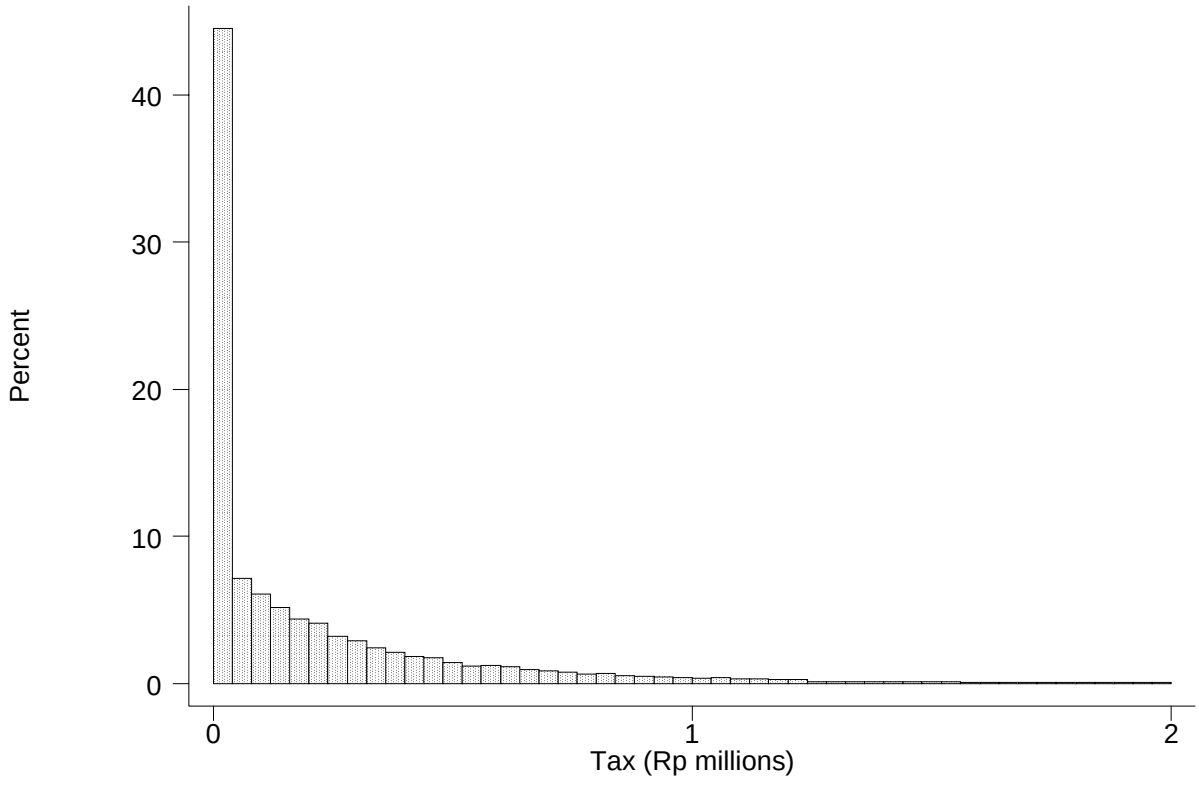

Table 3. Percentiles of the Distribution of Household Taxable Income (Rp)

Percentile (%)	Mean	Minimum	Maximum
0-10	1,536,178	0	2,980,500
10-20	3,803,741	2,982,000	4,515,000
20-30	5,120,452	4,516,000	5,699,996
30-40	6,252,790	5,700,000	6,843,750
40-50	7,494,583	6,843,996	8,155,500
50-60	8,906,814	8,156,000	9,718,898
60-70	10,710,152	9,719,193	11,849,775
70-80	13,435,665	11,850,000	15,347,496
80-90	18,369,528	15,348,031	22,393,704
90-100	91,596,865	22,394,220	184,570,576,896
90-91	22,981,667	22,394,220	23,640,000
91-92	24,279,217	23,640,156	24,894,488
92-93	25,701,146	24,896,064	26,452,500
93-94	27,367,791	26,454,332	28,343,308
94-95	29,628,956	28,346,456	30,970,080
95-96	32,422,717	30,979,528	34,120,316
96-97	36,125,566	34,130,708	38,467,000
97-98	41,614,616	38,475,768	45,600,000
98-99	52,139,905	45,653,328	61,183,060
99-100	624,276,760	61,185,836	184,570,576,896
99.0-99.1	62,572,215	61,185,836	63,615,372
99.1-99.2	65,014,574	63,684,096	66,894,488
99.2-99.3	68,800,526	66,923,704	70,903,936
99.3-99.4	72,886,163	70,917,112	75,744,496
99.4-99.5	79,191,517	75,744,880	83,200,000
99.5-99.6	87,179,919	83,250,000	92,009,368
99.6-99.7	99,330,301	92,151,112	105,613,776
99.7-99.8	117,595,034	106,053,600	129,577,808
99.8-99.9	152,025,805	129,960,000	190,049,888
99.9-100	5,455,160,093	191,363,696	184,570,576,896

Table 4. Shares of Total Taxpayers, Income, and Income Tax Payments Accounted for by Various Percentiles of the Household Income Distribution (%)

Percentile	Share of Taxpayers	Share of Income	Share of Income Tax Payments
0-10	8.53	0.92	0.01
10-20	8.91	2.28	0.03
20-30	9.15	3.06	0.09
30-40	9.34	3.74	0.16
40-50	9.47	4.48	0.29
50-60	9.70	5.33	0.49
60-70	9.98	6.41	0.83
70-80	10.57	8.04	1.38
80-90	11.29	10.99	2.37
90-100	13.06	54.77	94.35
90-91	1.18	1.38	0.33
91-92	1.24	1.46	0.35
92-93	1.21	1.53	0.38
93-94	1.24	1.64	0.43
94-95	1.22	1.77	0.47
95-96	1.28	1.94	0.54
96-97	1.29	2.16	0.66
97-98	1.43	2.50	0.88
98-99	1.50	3.11	1.29
99-100	1.48	37.30	89.02
99.0-99.1	0.13	0.37	0.19
99.1-99.2	0.16	0.39	0.19
99.2-99.3	0.14	0.41	0.22
99.3-99.4	0.14	0.44	0.25
99.4-99.5	0.14	0.48	0.30
99.5-99.6	0.15	0.52	0.33
99.6-99.7	0.14	0.59	0.42
99.7-99.8	0.15	0.70	0.57
99.8-99.9	0.16	0.91	0.92
99.9-100	0.16	32.49	85.64
Total (%)	100.00	100.00	100.00
Total (Absolute)	63.1 million	Rp 878.7 trillion	Rp 114.3 trillion

Table 5. Ratio of Household Income Tax Payments to Income by Household Income Percentile (%)

Percentile	Mean	Minimum	Maximum
0-10	0.2	-	20.0
10-20	0.2	-	20.0
20-30	0.4	-	12.8
30-40	0.5	-	18.0
40-50	0.8	-	11.7
50-60	1.2	-	17.9
60-70	1.7	-	18.8
70-80	2.2	-	13.7
80-90	2.8	-	11.2
90-100	4.4	0.6	35.0
90-91	3.1	0.7	10.6
91-92	3.2	0.6	10.3
92-93	3.3	1.4	7.6
93-94	3.4	1.2	8.5
94-95	3.4	1.4	9.4
95-96	3.6	1.3	9.3
96-97	4.0	1.8	8.9
97-98	4.6	2.1	12.7
98-99	5.4	2.3	14.9
99-100	9.8	3.2	35.0
99.0-99.1	6.5	3.2	8.5
99.1-99.2	6.3	3.5	8.4
99.2-99.3	7.0	3.5	8.9
99.3-99.4	7.4	3.6	9.2
99.4-99.5	8.1	4.2	9.9
99.5-99.6	8.3	4.1	10.4
99.6-99.7	9.3	3.9	12.2
99.7-99.8	10.5	4.4	13.4
99.8-99.9	13.2	5.4	16.9
99.9-100	22.1	7.4	35.0
Overall	1.5	-	35.0

Table 6. Alternative Income Tax Scenarios

	Absolute Amount	Relative to Base
Total Household Income		
Based on all income types	Rp 878.7 trillion	100.0
With farm business income excluded	Rp 785.2 trillion	89.3
Only labor income included	Rp 568.1 trillion	64.6
Total Personal Income Tax Payments		
Based on all income types	Rp 114.3 trillion	100.0
With farm business income excluded	Rp 112.3 trillion	98.3
Only labor income included	Rp 101.3 trillion	88.6
Percentage of Households Paying Zero Income Taxes		
Based on all income types	33.7	100.0
With farm business income excluded	48.1	143.2
Only labor income included	68.1	202.7

Appendix: Visual Basic Source Code to Process Households

The program starts from the Form_Load sub procedure in form frmProcessHH. Lines which are preceded by a single quotation mark are comments.

Form frmProcessHH

```
Option Explicit

Dim InputFile As String
Dim OutputFile As String
'Dim NotesFile As String
Dim InFileNum As Integer
Dim OutFileNum As Integer
'Dim NtsFileNum As Integer

Dim RT As RumahTangga
Dim Kepala As New Individual
Dim Anggota(1 To 20) As New Individual

Dim IstriSuami As New Collection
Dim Anak As New Collection
Dim Menantu As New Collection
Dim OrangTua As New Collection
Dim Cucu As New Collection
Dim SanakLain As New Collection
Dim Pembantu As New Collection
Dim Lainnya As New Collection

Const PTKPPribadi = 2880000
Const PTKPKawin = 1440000
Const PTKPDependent = 1440000
Const BiayaJabatanMax = 1296000
Const BiayaPensiunMax = 432000

Dim NumWP As Integer
Dim Title As String
Dim HH As Long

Dim GrossNetRatio As Double
Dim DividendFactor As Double
Dim InterestFactor As Double
```

Sub OlahRumahTangga()

```
Dim Orang As New Individual

Dim i As Integer
```

```
Dim NumDeps As Integer
Dim PensionerAge As Integer
Dim PensionerNum As Integer
Dim KeyIS As String
Dim NetUsaha As Double

' Initialize the number of dependents and number of wajib pajak in the rumah tangga.
NumDeps = 0
NumWP = 1

' Note that the physical presence of a spouse in the household is taken to be a proxy for
' the spouses pooling their assets.  If the spouse is not physically present, their assets
' in reality will not necessarily be separate.  The spouse could have been visiting
' relatives at the time of the survey, for example.
'
' It is in general very uncertain as to which person or persons could be receiving a pensiun.
' We will assign the pensiun to the kepala if that person is 55 years old or older, or to a
' kepala who is a widow or widower, or otherwise to the oldest person in the household.
' Under this rule, the pensioner could not be an anak, menantu, or cucu.  We will also assume
' that the pembantu is not a pensioner, although strictly speaking this cannot be ruled out
' a priori.  The kepala is typically male and typically the oldest.

If RT.Pensiun > 0 Then
   With Kepala
   If .Age >= 55 Or .Marital = 4 Then
      PensionerNum = 1
   Else
      PensionerAge = 0
      For i = 1 To RT.Size
         With Anggota(i)
            Select Case .Hubungan
' Allow pensioner to be Kepala, IstriSuami, OrangTua, SanakLain, or Lainnya
               Case 1, 2, 6, 7, 9
                  If .Age > PensionerAge Then
                     PensionerAge = .Age
                     PensionerNum = i
                  End If
            End Select
         End With
      Next i
   End If
   End With
' Pensioner gets PTKP pribadi unless already got it due to wage income.
   With Anggota(PensionerNum)
      .Pensioner = True
      If .PTKP = 0 Then .PTKP = PTKPPribadi
   End With
End If ' RT.Pensiun > 0

' Our presumed pensioner cannot be a dependent of the kepala rumah tangga (unless he/she is
```

```
' suami/istri), since by definition the pensioner is not fully dependent on the kepala.
'
' Process all anak

For Each Orang In Anak
With Orang
' To be a dependent, an anak must not work, must be less than 18, and must never have been
' married.
   If .NetWage = 0 Then
      If .Marital = 1 Then
         If .Age < 18 Then
            NumDeps = NumDeps + 1
' The DropOut subroutine adds the GrossIncome, and IncomeTax for a person to the totals for
' the household, then drops the person from the relevant collection.
            Call DropOut(Orang, Anak)
         Else
' The anak is no longer young enough to be a dependent, but is single and has no wage
income
' so also can be dropped.
            Call DropOut(Orang, Anak)
         End If
      ElseIf .Marital = 2 Then
         Select Case StatusIS(Orang, Menantu, KeyIS)
'
' The StatusIS (StatusIstriSuami) function returns one of three values:
'
'   = 0 if there is no spouse
'   = 1 if there is a spouse who does not work
'   = 2 if there is a spouse who works
'
' It may not be definitive that this person is the spouse, but the gender is correct and the
' presumed spouse is also married.
'
' In StatusIS:
' The first argument is the person for whom we are seeking a spouse.
' The second argument is the target collection in which we will search.
' The third argument is the key for the spouse in that collection, if found,
' in the form of a string version of his/her numeric position in that collection
' (e.g., "3"). If a viable istri/suami is not found, the key is set to "0".
'
' If our original person is in Anak, then the spouse will be in Menantu.  If our original
' person is in OrangTua, then so will the spouse.  I suppose that if the original person
' is in Cucu, then the spouse will be in SanakLain.
'
' Write unmarried children with no income to the output file, then drop them from the Anak
' collection, since they have no tax implications.
'
' These anak could be the parents of some of the cucu that live in the household, but to
' calculate taxes conservatively, these cucu will be allocated to any anak that can use the
' tax exemption, and if there are none, then the cucu will simply be dropped out.
```

```
'
            Case 0
' The anak is presumably married but there is no spouse present.  Since the person has no
' wage income, he/she can also be dropped.
                Call DropOut(Orang, Anak)
            Case 1
' The anak is married to someone who has no wage income as well.  Neither of them will
have
' to pay any taxes, so both can be dropped.  They might have children (cucu to the head of
' the household), but we will leave behind all cucu to be used as tax exemptions by any
' other anak or menantu with income (also applies to the previous case).
                Call DropOut(Orang, Anak)
                Call DropOut(Menantu.Item(KeyIS), Menantu)
            Case 2
' The anak is married to someone who has wage income.  We will provide the spouse with the
' additional PTKP for being married, and for up to three dependent cucu if any.  We can then
' calculate gross income for the spouse, who we will then drop out.  We can also drop this
' person since he/she has no further tax implications.
                With Menantu.Item(KeyIS)
                   .PTKP = .PTKP + PTKPKawin + GetDep(Cucu) * PTKPDependent
                End With
' The FindGrossWage subroutine calculates gross income and the income tax liability.
' If the Wajib Pajak has no working Istri/Suami, then no more calculations are needed.
                Call FindGrossWage(Menantu.Item(KeyIS))
                Call DropOut(Orang, Anak)
                NumWP = NumWP + 1
                Call DropOut(Menantu.Item(KeyIS), Menantu)
          End Select
       Else ' .Marital = 3 or .Marital = 4
' The anak is widowed or divorced, but has no wage income. The anak cannot be claimed as a
' dependent for his/her parents, since he/she has previously been married.  The anak could
' have his/her own children who live in the household, but we will leave them behind to
' become possible tax exemptions for any other anak, similar to above.
          Call DropOut(Orang, Anak)
       End If
    Else ' Anak has wage income
' In this case, we should look for possible spouses or dependent children (cucu).
       If .Marital = 1 Then
' Even if there are cucu, they are not legitimate for tax purposes, so we will leave them
' behind for now.
          Call FindGrossWage(Orang)
          NumWP = NumWP + 1
          Call DropOut(Orang, Anak)
       ElseIf .Marital = 2 Then
          Select Case StatusIS(Orang, Menantu, KeyIS)
             Case 0
' The anak is presumably married but there is no spouse present, so the anak does not
' get the tax exemption for being married.  Check to see if any cucu are present who could
' be used as tax deductions by this person.
                .PTKP = .PTKP + GetDep(Cucu) * PTKPDependent
```

```
                Call FindGrossWage(Orang)
                NumWP = NumWP + 1
                Call DropOut(Orang, Anak)
            Case 1
' There is a spouse present who does not work.  We should credit the anak with extra PTKP
' for being married, look for any cucu who could be used as tax deductions, find his/her
' gross income, and drop the anak and his/her spouse.
                .PTKP = .PTKP + PTKPKawin + GetDep(Cucu) * PTKPDependent
                Call FindGrossWage(Orang)
                NumWP = NumWP + 1
                Call DropOut(Orang, Anak)
                Call DropOut(Menantu.Item(KeyIS), Menantu)
            Case 2
' There is a spouse present who works.  We should credit one of them with the extra
' PTKP for being married, look for any cucu who could be used as tax deductions, find
' gross income for both anak and spouse, and drop both the anak and his or her spouse.
' (Note that all persons working already were credited with PTKP pribadi.)
'
' Who should be the wajib pajak?  The male?  The one with the highest income?  The
' latter approach would probably make the most sense from a conservative standpoint,
' and so the code below follows it.
                If .NetWage >= Menantu.Item(KeyIS).NetWage Then
                   .PTKP = .PTKP + PTKPKawin + GetDep(Cucu) * PTKPDependent
                Else
                   With Menantu.Item(KeyIS)
                      .PTKP = .PTKP + PTKPKawin + GetDep(Cucu) * PTKPDependent
                   End With
                End If
                Call FindGrossWage(Orang)
                Call FindGrossWage(Menantu.Item(KeyIS))
                Call CombineData(Orang, Menantu.Item(KeyIS))
                NumWP = NumWP + 1
' The FindTax function is used to calculate income taxes of Wajib Pajak, in particular
' those who have a working or pensioner spouse.  We will arbitrarily assume that the anak
' is the wajib pajak, rather than the menantu.  It makes no difference anyway.
                .IncomeTax = FindTax(.GrossIncome, .BiayaJabatan, .PTKP)
                Call DropOut(Orang, Anak)
                Call DropOut(Menantu.Item(KeyIS), Menantu)
         End Select
      Else ' .Marital = 3 or .Marital = 4
' The anak is widowed or divorced, and has wage income.  Look for any cucu that this anak
' could claim as dependents.
         .PTKP = .PTKP + GetDep(Cucu) * PTKPDependent
         Call FindGrossWage(Orang)
         NumWP = NumWP + 1
         Call DropOut(Orang, Anak)
      End If
   End If
End With
Next Orang ' anak
```

```
' Process any menantu that remain.  Presumably these menantu are married, but with spouse
' absent, or are widowed.  It is impossible for them to be single and unlikely for them to
' be divorced.  We will not give PTKP kawin to any such menantu who have income.
For Each Orang In Menantu
With Orang
   If .NetWage = 0 Then
' The menantu has no wage income.  Could have children (cucu) present, but we will leave
' them behind to be used for tax exemptions by any other menantu with income.
      Call DropOut(Orang, Menantu)
   Else
' See if there are any dependent children (cucu) who can be claimed as tax exemptions, then
' calculate gross income and drop the menantu from the collection.
      .PTKP = .PTKP + GetDep(Cucu) * PTKPDependent
      Call FindGrossWage(Orang)
      NumWP = NumWP + 1
      Call DropOut(Orang, Menantu)
   End If
End With
Next Orang ' menantu

' Process any orangtua or mertua.  We need to be on the lookout for those who can be claimed
' as dependents for the kepala rumah tangga.  For this to be the case, they cannot be married
' to someone who has wage or pension income.  Some of them could have their own wage
' income, but other than PTKP for spouse will not be allowed to claim PTKP for dependents.
For Each Orang In OrangTua
With Orang
' To be a dependent, an orangtua must not work, nor can there be a spouse who works.
   If .NetWage = 0 Then
      If .Marital = 2 Then
         Select Case StatusIS(Orang, OrangTua, KeyIS)
' There is no spouse present, so we will treat the OrangTua as a dependent if he/she has no
' pensiun and then drop him/her.
            Case 0
               If .Pensioner Then
                  NumWP = NumWP + 1
                  Call AddGrossPension(Orang)
                  .IncomeTax = FindTax(.GrossIncome, .BiayaPensiun, .PTKP)
               Else
                  NumDeps = NumDeps + 1
               End If
               Call DropOut(Orang, OrangTua)
            Case 1
' There is a spouse present, but neither of the spouses has wage income, so both are treatable
' as dependents if neither has a pensiun, and then both can be dropped.  Assign any pension
' income arbitrarily to our orang rather than his/her spouse; it makes no difference.
               If .Pensioner Then
                  NumWP = NumWP + 1
                  .PTKP = .PTKP + PTKPKawin
                  Call AddGrossPension(Orang)
```

```
                .IncomeTax = FindTax(.GrossIncome, .BiayaPensiun, .PTKP)
            ElseIf OrangTua.Item(KeyIS).Pensioner Then
                With OrangTua.Item(KeyIS)
                    NumWP = NumWP + 1
                    .PTKP = .PTKP + PTKPKawin
                    Call AddGrossPension(OrangTua.Item(KeyIS))
                    .IncomeTax = FindTax(.GrossIncome, .BiayaPensiun, .PTKP)
                End With
            Else
                NumDeps = NumDeps + 2
            End If
            Call DropOut(Orang, OrangTua)
            Call DropOut(OrangTua.Item(KeyIS), OrangTua)
        Case 2
' There is a spouse present, and the spouse has wage income, so neither is treatable
' as a dependent.  The spouse with wage income will get the extra PTKP for being kawin,
' but not for any other dependents, and then both can be dropped.
            With OrangTua.Item(KeyIS)
                .PTKP = .PTKP + PTKPKawin
            End With
            Call FindGrossWage(OrangTua.Item(KeyIS))
            NumWP = NumWP + 1
            If .Pensioner Then
' Our orang is a pensioner, but spouse has wage income, so need to combine their data.
                Call AddGrossPension(Orang)
                Call CombineData(Orang, OrangTua.Item(KeyIS))
                .IncomeTax = FindTax(.GrossIncome, .BiayaJabatan + .BiayaPensiun, .PTKP)
            ElseIf OrangTua.Item(KeyIS).Pensioner Then
' Spouse is a pensioner and is only one with wage income, so no need to combine their data.
                Call AddGrossPension(OrangTua.Item(KeyIS))
                With OrangTua.Item(KeyIS)
                .IncomeTax = FindTax(.GrossIncome, .BiayaJabatan + .BiayaPensiun, .PTKP)
                End With
            End If
' The DropOut subroutine will be sufficient if neither is a pensioner
            Call DropOut(OrangTua.Item(KeyIS), OrangTua)
            Call DropOut(Orang, OrangTua)
        End Select
    Else ' the orangtua is not married and has no wage income
' Presumably there could be no person never married who is an OrangTua or Mertua
        If .Pensioner Then
            NumWP = NumWP + 1
            Call AddGrossPension(Orang)
            .IncomeTax = FindTax(.GrossIncome, .BiayaPensiun, .PTKP)
        Else
            NumDeps = NumDeps + 1
        End If
        Call DropOut(Orang, OrangTua)
    End If
  Else ' the orangtua has wage income
```

```
      If .Marital = 2 Then
         Select Case StatusIS(Orang, OrangTua, KeyIS)
' There is no spouse present, so we will just calculate gross income for the orangtua,
' and then drop him/her.
            Case 0
               Call FindGrossWage(Orang)
               NumWP = NumWP + 1
               If .Pensioner Then
                  Call AddGrossPension(Orang)
                  .IncomeTax = FindTax(.GrossIncome, .BiayaJabatan + .BiayaPensiun, .PTKP)
               End If
' Our orang is not a pensioner, so DropOut is sufficient.
               Call DropOut(Orang, OrangTua)
            Case 1
' There is a spouse present, who does not have wage income.  Give the orangtua who works
' the extra PTKP for being kawin, find gross income for him/her, then drop them both.
               .PTKP = .PTKP + PTKPKawin
               Call FindGrossWage(Orang)
               NumWP = NumWP + 1
               If .Pensioner Then
' Our orang has wage income and pension income; no need to combine their data.
                  Call AddGrossPension(Orang)
                  .IncomeTax = FindTax(.GrossIncome, .BiayaJabatan + .BiayaPensiun, .PTKP)
               ElseIf OrangTua.Item(KeyIS).Pensioner Then
' Our orang has wage income, spouse has pension income; must combine their data.
                  Call AddGrossPension(OrangTua.Item(KeyIS))
                  Call CombineData(Orang, OrangTua.Item(KeyIS))
                  .IncomeTax = FindTax(.GrossIncome, .BiayaJabatan + .BiayaPensiun, .PTKP)
               End If
' If neither is a pensioner, then the DropOut subroutine is sufficient.
               Call DropOut(Orang, OrangTua)
               Call DropOut(OrangTua.Item(KeyIS), OrangTua)
            Case 2
' There is a spouse present, and the spouse has wage income.  The marital partner with the
' highest income will get extra PTKP for being kawin, but not for any other dependents,
' and then both can be dropped.
               If .NetWage >= OrangTua.Item(KeyIS).NetWage Then
                  .PTKP = .PTKP + PTKPKawin
               Else
                  With OrangTua.Item(KeyIS)
                     .PTKP = .PTKP + PTKPKawin
                  End With
               End If
               Call FindGrossWage(Orang)
               Call FindGrossWage(OrangTua.Item(KeyIS))
               NumWP = NumWP + 1
               If .Pensioner Then
                  Call AddGrossPension(Orang)
               ElseIf OrangTua.Item(KeyIS).Pensioner Then
                  Call AddGrossPension(OrangTua.Item(KeyIS))
```

```
                End If
' Both spouses have wage income, and maybe one has pension; must combine their data.
                Call CombineData(Orang, OrangTua.Item(KeyIS))
' Including both biaya jabatan and biaya pensiun below assures that all is accounted for.
' These are equal to zero if are not relevant.
                .IncomeTax = FindTax(.GrossIncome, .BiayaJabatan + .BiayaPensiun, .PTKP)
                Call DropOut(Orang, OrangTua)
                Call DropOut(OrangTua.Item(KeyIS), OrangTua)
            End Select
        Else ' the orangtua is not married but has wage income
' Presumably there could be no person never married who is an OrangTua or Mertua.
            Call FindGrossWage(Orang)
            NumWP = NumWP + 1
            If .Pensioner Then
               Call AddGrossPension(Orang)
               .IncomeTax = FindTax(.GrossIncome, .BiayaJabatan + .BiayaPensiun, .PTKP)
            End If
' If our orang is not a pensioner, then DropOut is sufficient.
            Call DropOut(Orang, OrangTua)
        End If
    End If
End With
Next Orang ' OrangTua

' We have found all possible dependents for the head of the household, so we can finish
' off him/her plus any istri/suami.

' We assume that the kepala rumah tangga is the wajib pajak.  All non-wage household
' income will be allocated to the kepala rumah tangga, as well as any wage income from a
' spouse.  Conceivably this could impart an upward bias in tax calculations, due to the
' progressivity of the income tax system: if in reality the income is more spread around
' among other wajib pajak that reside within the household, then in reality it would be
' taxed at a lower rate than if it is all attributed to the kepala.
'
' First credit the kepala for any dependents who are present, up to a maximum of three.
' It might be interesting to experiment with this as a matter of tax policy--how much
' of an impact would there be from allowing additional dependents?

' Even if the kepala has no wage income, and istri/suami does, all income will ultimately
' be attributed to the household under the kepala, so it is appropriate to provide him/her
' with all the PTKP possible.

With Kepala

    NumDeps = min(CDbl(NumDeps), 3)
    .PTKP = .PTKP + PTKPDependent * NumDeps

' We can dispense with checking the marital status of the kepala: instead just look for
' a spouse.
```

```
' Just make sure that the gender of the kepala and his/her istri/suami are copasetic.
      If StatusIS(Kepala, IstriSuami, KeyIS) > 0 Then
' Remember that the PTKP below is for the kepala as wajib pajak, not for the istri/suami.
' Any istri/suami with her/his own wage income has been given PKTP Pribadi, and that will
' ultimately be combined with the PKTP of the kepala.
         .PTKP = .PTKP + PTKPKawin
      End If
' If the kepala is not married, but there is a spouse present anyway (occurs in only one
' household), we will assume that the error was in coding for the marital status of the
' kepala.

' We will now find the gross wage income of the kepala rumah tangga, if net is positive.
' We do not need to augment NumWP for kepala, since initial NumWP was set to 1.
   If .NetWage > 0 Then Call FindGrossWage(Kepala)

' If someone has pension income and wage income, I presume that both kinds of income
' are treated the same way by the payers of the income for tax purposes, and that there
' is no recognition of the other income in the calculations of withholding tax.

' Is kepala a pensioner?
   If .Pensioner Then Call AddGrossPension(Kepala)

End With

' Now find spousal gross income as needed and then drop all spouses as well.

For Each Orang In IstriSuami
   With Orang
      If .NetWage > 0 Then Call FindGrossWage(Orang)
      If .Pensioner Then Call AddGrossPension(Orang)
' Find the gross wage income of the istri/suami, then add it to that of the kepala.
' Note that this setup allows for there to be more than one istri with wage income.
   End With
   Call CombineData(Kepala, Orang)
   Call DropOut(Orang, IstriSuami)
Next Orang ' in IstriSuami

' We now need to incorporate the various kinds of non-wage income into the gross income
' of the head of the household.

' Special treatment of interest and dividends is required, since taxes are presumably
' withheld from these prior to household receiving payment.  Pension income requires
' special treatment also, but has already been accounted for.

' The Usaha data have already been put on an annual basis.  We will subtract depreciation
' of capital investments and amortization of land investments from business income.  We do
' this using the straight line method of depreciation, which is mandatory for structures and
' land anyway.  It will be assumed that tools and equipment are four-year assets, and that
' land and structures are 20-year assets.  If the business records a loss, this can be used
' to offset any net profits over the next five years.  I will provide the LossCarryOver for
```

```
' the household as an output.

' These calculations are conservative in terms of tax revenues in that it is assumed that
' all capital goods and land are for business purposes, even if business income is zero in
' this year.  In particular, residential structures are included with other investments.
' In practice, many of these residences would be family homes and would not be deductible or
' creditable for tax purposes.

'GoTo SkipAll
'GoTo SkipTani
   With RT.TotalUsahaTani
      NetUsaha = .Pendapatan - .PerubahanStok
   End With
SkipTani:

   With RT.TotalUsahaLain
      NetUsaha = NetUsaha + .Pendapatan - .PerubahanStok
   End With

' Got to appear to have a business to take depreciation or amortization

   With RT.ModalTanah
   If NetUsaha <> 0 Then
      RT.AdaUsaha = 1
      RT.Depreciation = 0.25 * .Alat + 0.05 * .Lain
      NetUsaha = NetUsaha - RT.Depreciation
   Else
      RT.AdaUsaha = 0
      RT.Depreciation = 0
   End If
   End With

   If NetUsaha < 0 Then
      RT.LossCarryOver = -NetUsaha
      NetUsaha = 0
   Else
      RT.LossCarryOver = 0
   End If

   Kepala.GrossIncome = Kepala.GrossIncome + NetUsaha

' Exclude the types of income covered under Pasal 23
   With RT
      For i = 2 To 8
         Kepala.GrossIncome = Kepala.GrossIncome + .Lain(i)
      Next i
   End With
SkipAll:

' Note that the CombineData operation above added the PTKP for any working istri/suami
```

```
' (at most one) to that of the kepala.

' We need further refinements but lack the data for part: honoraria and asset income
' are subject to final withholding by issuers at fixed withholding rates (15% and 20%,
' respectively).  We do not have separate data on honoraria versus wages.

' Calculate the final tax bill of the head of household.  Since we may have combined other
' members of the household, and since any of these persons could have wage income or pension
' income, we need to allow for both biaya jabatan and biaya pensiun.
   With Kepala
      .IncomeTax = FindTax(.GrossIncome, .BiayaJabatan + .BiayaPensiun, .PTKP)
   End With

' The code below is the equivalent of Call DropOut ( ) for Kepala

   With RT
      .Pasal25Income = .Pasal25Income + Kepala.GrossIncome
      .Pasal25Tax = .Pasal25Tax + Kepala.IncomeTax
   End With

' All that remain are cucu who are not allowable as dependents, SanakLain, Pembantu, and
' Lainnya.  There could be cucu who have no income, but were not usable as dependents for
' one reason or another.
'
For Each Orang In Cucu
With Orang
   Select Case .Marital
      Case 1
' Presumably the cucu has never been married, so will have no dependent children
         If .NetWage > 0 Then
            Call FindGrossWage(Orang)
            NumWP = NumWP + 1
         End If
         Call DropOut(Orang, Cucu)
      Case 2
         Select Case StatusIS(Orang, SanakLain, KeyIS)
            Case 0
' We did not find a spouse, but perhaps there could be dependent cicit anyway.  The GetDepLain
' function adds an extra age difference test to determine potential offspring.
               If .NetWage > 0 Then
                  .PTKP = .PTKP + GetDepLain(Orang, Orang, SanakLain) * PTKPDependent
                  Call FindGrossWage(Orang)
                  NumWP = NumWP + 1
               End If
               Call DropOut(Orang, Cucu)
            Case 1
' There is a probable spouse who does not work, and may be dependent cicit also.
' After checking for income, drop the person and the spouse.
```

```
                If .NetWage > 0 Then
                   .PTKP = .PTKP + PTKPKawin + GetDepLain(Orang,
SanakLain.Item(KeyIS), SanakLain) * PTKPDependent
                   Call FindGrossWage(Orang)
                   NumWP = NumWP + 1
                End If
                Call DropOut(Orang, Cucu)
                Call DropOut(SanakLain.Item(KeyIS), SanakLain)
             Case 2
' There is a probable spouse who works, and may be dependent cicit also.  Give the extra
PTKP
' to the spouse with the higher income.  Note that our cucu could have zero wage income.
                If .NetWage >= SanakLain.Item(KeyIS).NetWage Then
                   .PTKP = .PTKP + PTKPKawin + GetDepLain(Orang,
SanakLain.Item(KeyIS), SanakLain) * PTKPDependent
                Else
                   With SanakLain.Item(KeyIS)
                      .PTKP = .PTKP + PTKPKawin + GetDepLain(Orang,
SanakLain.Item(KeyIS), SanakLain) * PTKPDependent
                   End With
                End If
                If .NetWage > 0 Then Call FindGrossWage(Orang)
                Call FindGrossWage(SanakLain.Item(KeyIS))
                Call CombineData(Orang, SanakLain.Item(KeyIS))
                .IncomeTax = FindTax(.GrossIncome, .BiayaJabatan, .PTKP)
                NumWP = NumWP + 1
                Call DropOut(Orang, Cucu)
                Call DropOut(SanakLain.Item(KeyIS), SanakLain)
          End Select
       Case 3, 4
' Cucu is divorced or widowed.  If has wage income, check for dependent children.
          If .NetWage > 0 Then
             .PTKP = .PTKP + GetDepLain(Orang, Orang, SanakLain) * PTKPDependent
             Call FindGrossWage(Orang)
             NumWP = NumWP + 1
          End If
          Call DropOut(Orang, Cucu)
    End Select
End With
Next Orang ' in Cucu

' Process all remaining members of the household:
Call ProcessGroup(SanakLain)
Call ProcessGroup(Pembantu)
Call ProcessGroup(Lainnya)

End Sub ' OlahRumahTangga
```

Sub ProcessGroup(ByRef Group As Collection)

```
Dim Orang As New Individual
Dim KeyIS As String

' This is an all-purpose routine to handle SanakLain, Pembantu, and Lainnya.  For persons
' who are married, it will check for potential marital partners in the same group.  It will
' also check for possible dependents.  We would like to be able to ignore the tests of
' whether the person is pensioner for pembantu, whom are not allowed to be a pensioner by
' assumption.

For Each Orang In Group
With Orang
   Select Case .Marital
      Case 1
' Presumably the orang has never been married, so he/she will have no dependent children.
         If .NetWage > 0 Or .Pensioner Then
            NumWP = NumWP + 1
' If our orang is not a pensioner, then FindGrossWage will calculate the correct income taxes.
            If .NetWage > 0 Then Call FindGrossWage(Orang)
            If .Pensioner Then
               Call AddGrossPension(Orang)
               .IncomeTax = FindTax(.GrossIncome, .BiayaJabatan + .BiayaPensiun, .PTKP)
' The use of both biaya jabatan and biaya pensiun above is easiest; if the person has no wage
' income, then biaya jabatan will simply be equal to zero.
            End If
         End If
      Case 2
         Select Case StatusIS(Orang, Group, KeyIS)
            Case 0
' We did not find a spouse, but perhaps there could be dependent children anyway.
               If .NetWage > 0 Or .Pensioner Then
                  NumWP = NumWP + 1
                  .PTKP = .PTKP + GetDepLain(Orang, Orang, Group) * PTKPDependent
                  If .NetWage > 0 Then Call FindGrossWage(Orang)
                  If .Pensioner Then
                     Call AddGrossPension(Orang)
                  .IncomeTax = FindTax(.GrossIncome, .BiayaJabatan + .BiayaPensiun, .PTKP)
                  End If
               End If
            Case 1
' There is a probable spouse who does not work, and may be dependent children also.
               If .NetWage > 0 Or .Pensioner Or Group.Item(KeyIS).Pensioner Then
                  NumWP = NumWP + 1
' Figure out who should get the extra PTKP; let wage trump pension if orang has wage and
' istri/suami has pension.
                  If .NetWage > 0 Or .Pensioner Then
                     .PTKP = .PTKP + PTKPKawin + GetDepLain(Orang, Group.Item(KeyIS),
Group) * PTKPDependent
```

```
                Else ' it must be that the spouse is a pensioner
                   With Group.Item(KeyIS)
                      .PTKP = .PTKP + PTKPKawin + GetDepLain(Orang,
Group.Item(KeyIS), Group) * PTKPDependent
                   End With
                End If
                If .NetWage > 0 Then Call FindGrossWage(Orang)
                If .Pensioner Then
                   Call AddGrossPension(Orang)
                ElseIf Group.Item(KeyIS).Pensioner Then
                   Call AddGrossPension(Group.Item(KeyIS))
                End If
' It is easiest to combine the data, and then calculate taxes.  May not actually be necessary
' to combine the data, but this covers all contingencies.
                Call CombineData(Orang, Group.Item(KeyIS))
                .IncomeTax = FindTax(.GrossIncome, .BiayaJabatan + .BiayaPensiun, .PTKP)
             End If
             Call DropOut(Group.Item(KeyIS), Group)
          Case 2
' There is an istri/suami who works, and may be dependent children also.  Give the extra
' PTKP to the spouse with the higher income.  Note: our orang could have zero wage income.
             NumWP = NumWP + 1
             If .NetWage >= Group.Item(KeyIS).NetWage Then
                .PTKP = .PTKP + PTKPKawin + GetDepLain(Orang, Group.Item(KeyIS),
Group) * PTKPDependent
             Else
                With Group.Item(KeyIS)
                   .PTKP = .PTKP + PTKPKawin + GetDepLain(Orang, Group.Item(KeyIS),
Group) * PTKPDependent
                End With
             End If
' We do not know whether our orang has wage income, but are certain that his/her spouse
does.
             If .NetWage > 0 Then Call FindGrossWage(Orang)
             Call FindGrossWage(Group.Item(KeyIS))
             If .Pensioner Then
                Call AddGrossPension(Orang)
             ElseIf Group.Item(KeyIS).Pensioner Then
                Call AddGrossPension(Group.Item(KeyIS))
             End If
' It is easiest to combine the data, and then calculate taxes.  May not actually be necessary
' to combine the data, but this covers all contingencies.
             Call CombineData(Orang, Group.Item(KeyIS))
             .IncomeTax = FindTax(.GrossIncome, .BiayaJabatan + .BiayaPensiun, .PTKP)
             Call DropOut(Group.Item(KeyIS), Group)
       End Select
    Case 3, 4
' Orang is divorced or widowed.  If he/she has income, can check for dependent children.
       If .NetWage > 0 Or .Pensioner Then
          NumWP = NumWP + 1
```

```
            .PTKP = .PTKP + GetDepLain(Orang, Orang, Group) * PTKPDependent
            If .NetWage > 0 Then Call FindGrossWage(Orang)
            If .Pensioner Then
               Call AddGrossPension(Orang)
               .IncomeTax = FindTax(.GrossIncome, .BiayaJabatan + .BiayaPensiun, .PTKP)
            End If
         End If
   End Select
   Call DropOut(Orang, Group)
End With
Next Orang ' in Group

End Sub ' ProcessGroup
```

Function GetDep(Group As Collection) As Integer

```
Dim Orang As New Individual

GetDep = 0
' Look for cucu who could be dependents for anak and menantu.  Drop out any cucu who are
' found who could be dependents.  If a cucu is not married and has no income, but does not
' fit the bill as a dependent due to age, we can drop out that cucu as well. Cucu who are
' married or who have income are retained for the moment.

For Each Orang In Group
With Orang
' To be a dependent, a child must not work, must be less than 18, and must never have been
' married.
   If .NetWage = 0 Then
      Select Case .Marital
' Write unmarried cucu/cicit with no income to the output file, then drop them from the
' collection, since they have no further tax implications.
         Case 1
            If .Age < 18 Then GetDep = GetDep + 1
            Call DropOut(Orang, Group)
         Case 3, 4
            Call DropOut(Orang, Group)
      End Select
   End If
' We will do conservative tax estimate, and assume that the Cucu are optimally allocated to
' married children for purposes of tax calculation.
   If GetDep = 3 Then Exit For
' Otherwise cucu has income that must be treated separately for taxes. Cucu could be married,
' have children of own, who would be dependents. It gets very dicey at this point, however,
' since these others are not well described in the lainnya collection.
End With
Next Orang

End Function ' GetDep
```

Function GetDepLain(ByVal CalonOrangTua1 As Individual, ByVal CalonOrangTua2 As Individual, ByRef Group As Collection) As Integer

```
Dim Orang As New Individual
Dim ReferenceAge As Integer

GetDepLain = 0
' This is a more speculative version of GetDep.  We do not have any information on
' interrelationships between these members of the household.  However, we can compare
' their ages.  It is reasonable that the dependents be at least 12 years younger than
' the older of the mother and father.

ReferenceAge = max(CalonOrangTua1.Age, CalonOrangTua2.Age) - 12

' Look for persons who could be dependents for Orang and IstriSuami.  Drop out
' any children who are found who could be dependents.  If a person is not married
' and has no income, but does not fit the bill as a dependent due to age >= 18 ,
' we can drop out that person as well. Others who are married or who have income
' are retained for the moment.

For Each Orang In Group
With Orang
If .Key <> CalonOrangTua1.Key And .Key <> CalonOrangTua2.Key Then
' To be a dependent, a child must not work, must be less than 18,
' and must never have been married.
   If .NetWage = 0 Then
      Select Case .Marital
' Write unmarried cucu/cicit with no income to the output file, then drop then from the
' collection, since they have no further tax implications.
         Case 1
            If .Age < 18 And .Age <= ReferenceAge Then GetDepLain = GetDepLain + 1
            Call DropOut(Orang, Group)
         Case 3, 4
            Call DropOut(Orang, Group)
      End Select
   End If
' We will do conservative tax estimate, and assume that the children are
' optimally allocated to married couples for purposes of tax calculation.
   If GetDepLain = 3 Then Exit For
End If
End With
Next Orang

End Function ' GetDepLain
```

Function StatusIS(ByVal OrangIni As Individual, ByVal Group As Collection, ByRef KeyIS As String) As Integer

```
Dim GenderOrangIni As Integer
Dim Orang As New Individual
Dim Score As Integer
Dim LastIS As Boolean
Dim NextIS As Boolean
Dim LastD As Integer
Dim NextD As Integer

'Initialize these values
StatusIS = 0
KeyIS = "0"

' Get the gender of the person for whom we are seeking a suami/istri.
   GenderOrangIni = OrangIni.Gender

For Each Orang In Group
   With Orang
' Note that if OrangIni is in the OrangTua collection, then we will be searching for candidate
' istri or suami in that same collection.  By putting the gender check first below, this is
' made as efficient as possible.
      If .Gender <> GenderOrangIni Then
         If .Marital = 2 Then
' We have found someone who could be the istri or suami of OrangIni: they are in the target
' collection, of the opposite gender, and married.  We will check all the persons in the target
' group.  If we find an initial candidate istri/suami, but then a subsequent candidate is more
' plausible, then we will go with the subsequent one.  Plausibility is defined here as the suami
' being at least as old as the istri: for the heads of households in the Susenas income survey, in
' more 95 percent of the marriages the suami is at least as old as the istri.  The mean
difference
' between their ages is five years, but the mode is about 3.5 years.

            If KeyIS = "0" Then
               If .NetWage = 0 Then StatusIS = 1 Else StatusIS = 2
               KeyIS = .Key
            Else
' We have found a plausible second candidate spouse.  Note Male = 1, Female = 2.  Mean
' and more or less modal difference is male five years older
               If GenderOrangIni = 1 Then
                  LastD = OrangIni.Age - Group.Item(KeyIS).Age
                  NextD = OrangIni.Age - Orang.Age
               Else
                  LastD = Group.Item(KeyIS).Age - OrangIni.Age
                  NextD = Orang.Age - OrangIni.Age
               End If
               LastIS = LastD >= 0
               NextIS = NextD >= 0
' Is the subsequent possible marriage an improvement over the first in terms of ages?
```

```
' Main criterion is whether husband is at least as old as wife.  If that is a matter of
' indifference (one way or the other) then look at age differential:
                If (NextIS And Not LastIS) Or ((Abs(NextD - 3.5) < Abs(LastD - 3.5)) And
(LastIS = NextIS)) Then
                    If .NetWage = 0 Then StatusIS = 1 Else StatusIS = 2
                    KeyIS = .Key
                End If
            End If
        End If
    End If
  End With
Next Orang
End Function ' StatusIS
```

Sub CombineData(ByRef WajibPajak As Individual, ByRef IstriSuami As Individual)

```
' Consolidates the key data for a wajib pajak and his/her working or pensioner Istri/Suami.
' We have to first convert the net wage into a gross wage, and then combine the gross wages
' into the gross income of the wajib pajak.  We also combine their individual biaya jabatan
' and PTKP.  Based on their gross income amount (added with other gross income in the case
' of the kepala rumah tangga), their biaya jabatan, and their PTKP we can calculate their
' taxable income and thus their income tax liability.
'
' NetIncome is no longer relevant for either the Wajib Pajak or Istri/Suami.
With WajibPajak
   .GrossIncome = .GrossIncome + IstriSuami.GrossIncome
   .PTKP = .PTKP + IstriSuami.PTKP
   .BiayaJabatan = .BiayaJabatan + IstriSuami.BiayaJabatan
   .BiayaPensiun = .BiayaPensiun + IstriSuami.BiayaPensiun
End With
' The following is necessary, at least for gross income, since DropOut subroutine would
' otherwise add in the income.
With IstriSuami
   .GrossIncome = 0
   .PTKP = 0
   .BiayaJabatan = 0
   .BiayaPensiun = 0
End With

End Sub ' CombineData
```

Sub DropOut(ByRef Orang As Individual, ByRef Group As Collection)

```
With RT
   If Orang.GrossIncome > 0 Then
      .Pasal25Income = .Pasal25Income + Orang.GrossIncome
      .Pasal25Tax = .Pasal25Tax + Orang.IncomeTax
   End If
End With
```

```
Group.Remove Orang.Key

End Sub ' DropOut
```

Sub FindGrossWage(ByRef Orang As Individual)

```
Dim Upper As Double
Dim Lower As Double
Dim Delta As Double

With Orang

' Check to see if already has taxable income of zero, even before biaya jabatan are taken
' into account.
   If .PTKP >= .NetWage Then
      .GrossIncome = .NetWage
      .BiayaJabatan = min(0.05 * .GrossIncome, BiayaJabatanMax)
      Exit Sub
   End If

' Bracket gross income between net income and limiting ratio
Lower = .NetWage
Upper = GrossNetRatio * .NetWage

Do
' Split the difference between the last two best guesses:

   .GrossIncome = 0.5 * (Lower + Upper)
' Find exemption for biaya jabatan, based on gross income estimate.

   .BiayaJabatan = min(0.05 * .GrossIncome, BiayaJabatanMax)
   .IncomeTax = FindTax(.GrossIncome, .BiayaJabatan, .PTKP)
   Delta = .GrossIncome - .IncomeTax - .NetWage
' The logic is that, If Delta > 0 then .GrossIncome is too high.  Otherwise, it is too low.
   If Delta > 0 Then Upper = .GrossIncome Else Lower = .GrossIncome

' Since the numbers are large to begin with, we cannot impose too many additional decimal
' places of accuracy.

Loop Until Abs(Delta) < 0.0001

End With

End Sub
```

Sub AddGrossPension(ByRef Orang As Individual)

```
Dim Upper As Double
Dim Lower As Double
```

```
Dim Delta As Double
Dim GrossPensiun As Double
Dim TaxOnPensiun As Double

With Orang

   If .PTKP >= RT.Pensiun Then
' Gross and net pension are identical
      .BiayaPensiun = min(0.05 * RT.Pensiun, BiayaPensiunMax)
      Exit Sub
   End If

' Bracket gross income between net income and limiting ratio
Lower = RT.Pensiun
Upper = GrossNetRatio * RT.Pensiun

Do
' Split the difference between the last two best guesses:

   GrossPensiun = 0.5 * (Lower + Upper)

' Find exemption for biaya pensiun, based on gross pension estimate.

   .BiayaPensiun = min(0.05 * GrossPensiun, BiayaPensiunMax)
   TaxOnPensiun = FindTax(GrossPensiun, .BiayaPensiun, .PTKP)
   Delta = GrossPensiun - TaxOnPensiun - RT.Pensiun
   If Delta > 0 Then Upper = GrossPensiun Else Lower = GrossPensiun

Loop Until Abs(Delta) < 0.0001

.GrossIncome = .GrossIncome + GrossPensiun

End With

End Sub ' AddGrossPensiun
```

Function FindTax(ByVal Income As Double, ByVal Biaya As Double, ByVal PTKP As Double) As Double

```
Dim Taxable As Double

' Allows for the possibility that the person and their suami/istri have both wage income and
' pensiun income: Biaya receives either BiayaJabatan, BiayaPensiun, or their sum, depending
' on context.

   Taxable = Income - PTKP - Biaya

' The first valid condition below will be executed, so that only one-sided tests are required
' at each step.
```

```
    If Taxable <= 0 Then
        FindTax = 0
    ElseIf Taxable <= 25000000 Then
        FindTax = 0.05 * Taxable
    ElseIf Taxable <= 50000000 Then
        FindTax = 1250000 + 0.1 * (Taxable - 25000000)
    ElseIf Taxable <= 100000000 Then
        FindTax = 3750000 + 0.15 * (Taxable - 50000000)
    ElseIf Taxable <= 200000000 Then
        FindTax = 11250000 + 0.25 * (Taxable - 100000000)
    Else
        FindTax = 36250000 + 0.35 * (Taxable - 200000000)
    End If

End Function
```

Private Sub Form_Load()

```
Dim i As Integer
Dim Num As String

InputFile = "c:\Data\Indonesia\Bappenas\All Projects\Tax Issues\Income Tax\Data 2002\Susenas Combined.txt"
OutputFile = "c:\Data\Indonesia\Bappenas\All Projects\Tax Issues\Income Tax\Data 2002\Susenas Combined.out"
'NotesFile = "c:\Data\Indonesia\Bappenas\All Projects\Tax Issues\Income Tax\Data 2002\Basic\Susenas Combined.nts"

InFileNum = FreeFile
Open InputFile For Input As #InFileNum

' Error handling enabled
On Error Resume Next
Kill OutputFile
OutFileNum = FreeFile
Open OutputFile For Output As #OutFileNum
'Kill NotesFile
'NtsFileNum = FreeFile
'Open NotesFile For Output As #NtsFileNum
On Error GoTo 0
' Error handling disabled

Me.Show
DoEvents

' The limiting ratio of gross income to net income
GrossNetRatio = 1 / (1 - 0.35)
' The ratio of gross interest to net interest
InterestFactor = 1 / (1 - 0.2)
```

```
' The ratio of gross dividends to net dividends
DividendFactor = 1 / (1 - 0.15)
' As far as I know, the rate of withholding taxation on dividends remains at 15 percent, but
' it has been increased to 20 percent for interest.

Title = "Process Households"

' Household counter, which may aid in debugging but otherwise plays no role.

HH = 0

Do While Not EOF(InFileNum)

HH = HH + 1

Call DapatRumahTangga

For i = 1 To RT.Size
With Anggota(i)
   .Hubungan = RT.A(i).Hubungan
   .Gender = RT.A(i).Gender
   .Age = RT.A(i).Age
   .Marital = RT.A(i).Marital
' Zero out these properties to make sure there is not leftover data from a previous household.
' It is cleanest to do this all at once.
   .GrossIncome = 0
   .NetWage = 0
   .IncomeTax = 0
   .BiayaJabatan = 0
   .BiayaPensiun = 0
   .PTKP = 0
   .Pensioner = False
End With
Next i

' The 11 wage income entries are not in any particular order, and there may be gaps between
' non-zero observations, so all of the entries must be examined.

RT.NumberEarners = 0
For i = 1 To 11
   If RT.Wage(i).Rupiah > 0 Then
      RT.NumberEarners = RT.NumberEarners + 1
      With Anggota(RT.Wage(i).Anggota)
' Convert monthly to annual income
         .NetWage = 12 * RT.Wage(i).Rupiah
' Handle PTKP pribadi
         .PTKP = PTKPPribadi
' Thus we are allowing PTKPPribadi to everyone who works, even the one person who happens
' to be the second working wife of her husband.
```

```
        End With
    End If
Next i

For i = 1 To RT.Size
With Anggota(i)
Select Case .Hubungan
' Want to use a key (string) rather than an index (integer)because the index to the item in
' the collection can change as items are removed from the collection.  We want to be able to
' refer to the proper key under all circumstances.  Microsoft says that string key searches
' are very fast compared to integer index searches.
    Case 1
        Set Kepala = Anggota(i)
    Case 2
        Num = CStr(IstriSuami.Count) + 1
        IstriSuami.Add Item:=Anggota(i), Key:=Num
        .Key = Num
    Case 3
        Num = CStr(Anak.Count) + 1
        Anak.Add Item:=Anggota(i), Key:=Num
        .Key = Num
    Case 4
        Num = CStr(Menantu.Count) + 1
        Menantu.Add Item:=Anggota(i), Key:=Num
        .Key = Num
    Case 5
        Num = CStr(Cucu.Count) + 1
        Cucu.Add Item:=Anggota(i), Key:=Num
        .Key = Num
    Case 6
        Num = CStr(OrangTua.Count) + 1
        OrangTua.Add Item:=Anggota(i), Key:=Num
        .Key = Num
    Case 7
        Num = CStr(SanakLain.Count) + 1
        SanakLain.Add Item:=Anggota(i), Key:=Num
        .Key = Num
    Case 8
        Num = CStr(Pembantu.Count) + 1
        Pembantu.Add Item:=Anggota(i), Key:=Num
        .Key = Num
    Case 9
        Num = CStr(Lainnya.Count) + 1
        Lainnya.Add Item:=Anggota(i), Key:=Num
        .Key = Num
End Select
End With
Next i

' If the kepala has not yet gotten PTKP pribadi, assign it, since the kepala will be assigned
```

```
' all the non-wage and non-pension income in the household.
With Kepala
   If .PTKP = 0 Then .PTKP = PTKPPribadi
End With

' Main part of program is invoked once there are no more members of the household to add:

OlahRumahTangga

With RT
   Print #OutFileNum, .Ident & Dx(.Pasal25Income, 16) & Dx(.Pasal25Tax, 16) _
      & Dx(.LossCarryOver, 16) & Dx(.Depreciation, 16) & Dx(.Pasal23Income, 16) & Dx(.Pasal23Tax, 16) _
      & Dx(.Wert, 8) & Dx(NumWP, 4) & Dx(.AdaUsaha, 4) & Dx(.FarmBusiness, 4) & Dx(.NumberEarners, 4)
End With

' Make certain the collections are empty for the next household. (This is important if we
' only process a subset of the observations: observations at the "edges" of these sections
' could cause problems.)

   Set Kepala = Nothing
   Set IstriSuami = Nothing
   Set Anak = Nothing
   Set Menantu = Nothing
   Set Cucu = Nothing
   Set OrangTua = Nothing
   Set SanakLain = Nothing
   Set Pembantu = Nothing
   Set Lainnya = Nothing

Loop

Close InFileNum
Close OutFileNum
'Close NtsFileNum

Inform.Caption = "Finished!"
End Sub
```

Sub ExamineMarriages()

```
Dim Orang As New Individual

If Kepala.Marital = 2 Then
   For Each Orang In IstriSuami
      Print #OutFileNum, RT.Ident & Dx(Kepala.Age, 4) & Dx(Kepala.Gender, 4) _
         & Dx(Orang.Age, 4) & Dx(RT.Wert, 8)
   Next Orang
```

```
End If

End Sub
```

Function min(ByVal x As Double, ByVal Y As Double) As Double

```
   If x > Y Then min = Y Else min = x
End Function
```

Function max(ByVal x As Double, ByVal Y As Double) As Double

```
   If x > Y Then max = x Else max = Y
End Function
```

Public Function Dx(ByVal n As Double, x As Integer) As String

```
' Formats double-precision numbers into fixed-width fields that are x characters wide.
' In present simplified form, allows for no decimal places to be displayed.
   Dx = Format(n, "#0")
   Dx = Space(x - Len(Dx)) & Dx
End Function
```

Private Sub Exit_Click()

```
   Unload Me
End Sub
```

Sub DapatRumahTangga()

```
Dim i As Integer
' The numerical data are double-precision real numbers, so it is best to do multiplication
' only as necessary.  Note that all these items are on a single line of the input file.
With RT
   Input #InFileNum, .Ident, .Size
' Upah/gaji data are from the last month
   For i = 1 To 11
      With RT.Wage(i)
         Input #InFileNum, .Anggota, .Rupiah
' It is more efficient to annualize later as needed (only for positive values).
      End With
   Next i
   Input #InFileNum, .TotalUpahGaji
   If .TotalUpahGaji > 0 Then .TotalUpahGaji = 12 * .TotalUpahGaji
' Pendapatan and PerubahanStok from usaha tani are over the last year
   For i = 1 To 5
      With RT.Usaha(i)
         Input #InFileNum, .Pendapatan, .PerubahanStok
      End With
   Next i
```

```
    With RT.TotalUsahaTani
      Input #InFileNum, .Pendapatan, .PerubahanStok
      If .Pendapatan <> 0 Then RT.FarmBusiness = 1 Else RT.FarmBusiness = 0
    End With
' Pendapatan and PerubahanStok from usaha tani are over the last quarter
    For i = 6 To 10
      With RT.Usaha(i)
        Input #InFileNum, .Pendapatan, .PerubahanStok
        If .Pendapatan > 0 Then .Pendapatan = 4 * .Pendapatan
        If .PerubahanStok > 0 Then .PerubahanStok = 4 * .PerubahanStok
      End With
    Next i
    With RT.TotalUsahaLain
      Input #InFileNum, .Pendapatan, .PerubahanStok
      If .Pendapatan > 0 Then .Pendapatan = 4 * .Pendapatan
      If .PerubahanStok > 0 Then .PerubahanStok = 4 * .PerubahanStok
    End With
' The other income data are over the last year
    For i = 1 To 9
      Input #InFileNum, .Lain(i)
    Next i
    Input #InFileNum, .TotalLain
' The additions to barang modal are over the last year
    With RT.ModalTanah
      Input #InFileNum, .Alat, .Lain
    End With
' The pensiun money is over the last year
    Input #InFileNum, .Pensiun

' Objects are required for use in collections, but we cannot input data directly into object
' properties, so use a buffer:

    For i = 1 To 15
      With RT.A(i)
        Input #InFileNum, .Hubungan, .Gender, .Age, .Marital
      End With
    Next i
    Input #InFileNum, .Wert

    .Pasal25Income = 0
    .Pasal25Tax = 0

' Income tax on interest, dividends, and royalties.  Presumably only interest-bearing accounts
' in excess of Rp 7,500,000 are taxed.  However, at this point at least, I will for simplicity
' tax all accounts.  By the way, is it only the amount in excess of Rp 7,500,000 that is taxed,
' or the full amount?  Would be very awkward if the full amount: then the marginal rate of
' taxation on the last rupiah up to Rp 7,500,000 would be extremely high.
'
'GoTo SkipPasal23
    If .Lain(1) > 0 Then .Lain(1) = .Lain(1) * InterestFactor   ' 1/(1-.20)
```

```
    If .Lain(9) > 0 Then .Lain(9) = .Lain(9) * DividendFactor   ' 1/(1-.15)

' Find gross income and tax liability under Pasal 23

    .Pasal23Income = .Lain(1) + .Lain(9)
    .Pasal23Tax = 0.2 * .Lain(1) + 0.15 * .Lain(9)
SkipPasal23:

End With ' RT
End Sub
```

Module ProcessHH

```
' This module is used to define user-defined data types that are used to hold various data on
' each household and its members.

Public Type WageEarner
    Anggota As Integer        ' Identifies the member of the household with his/her number.
    Rupiah  As Double         ' The wage earned by the member during the last month in rupiah.
End Type

Public Type UsahaRT
    Pendapatan      As Double
    PerubahanStok   As Double
End Type

Public Type Penambahan
    Alat        As Double
    Lain        As Double
End Type

Public Type AnggotaRT
    Hubungan    As Integer
    Gender      As Integer
    Age         As Integer
    Marital     As Integer
End Type

Public Type RumahTangga
    Ident               As String
    Size                As Integer
    Wage(1 To 11)       As WageEarner
    Usaha(1 To 10)      As UsahaRT
    AdaUsaha            As Integer
    Lain(1 To 9)        As Double
    Pensiun             As Double
    ModalTanah          As Penambahan
    TotalUpahGaji       As Double
    TotalUsahaTani      As UsahaRT
```

```
    TotalUsahaLain      As UsahaRT
    TotalLain           As Double
    A(1 To 15)          As AnggotaRT
    Wert                As Double

    Pasal25Income       As Double
    Pasal25Tax          As Double
    Pasal23Income       As Double
    Pasal23Tax          As Double
    LossCarryOver       As Double
    Depreciation        As Double
    NumberEarners       As Integer
    FarmBusiness        As Integer
End Type
```

Class Module Individual

```
' This is a class module.  The data on individual members of the household will be stored in
' objects of this class, rather than as variables or array elements of a user-defined data type, so
' that the members can be added to collections of household members (IstriSuami, Anak,
' Menantu, Cucu, OrangTua, SanakLain, Pembantu, and Lainnya).  The Kepala of the
' household is not kept in a collection, but is kept in an object of this class also.
'
'
Option Explicit
Public Hubungan As Integer
Public Gender As Integer
Public Age As Integer
Public Marital As Integer
Public NetWage As Double
Public BiayaJabatan As Double
Public BiayaPensiun As Double
Public PTKP As Double
Public GrossIncome As Double
Public IncomeTax As Double
Public Pensioner As Boolean
Public Key As String
' The key is the index for the collection to which the individual is added.  It is used to keep
' track of individuals so that they can be removed from the collection or manipulated in other
' ways.
```